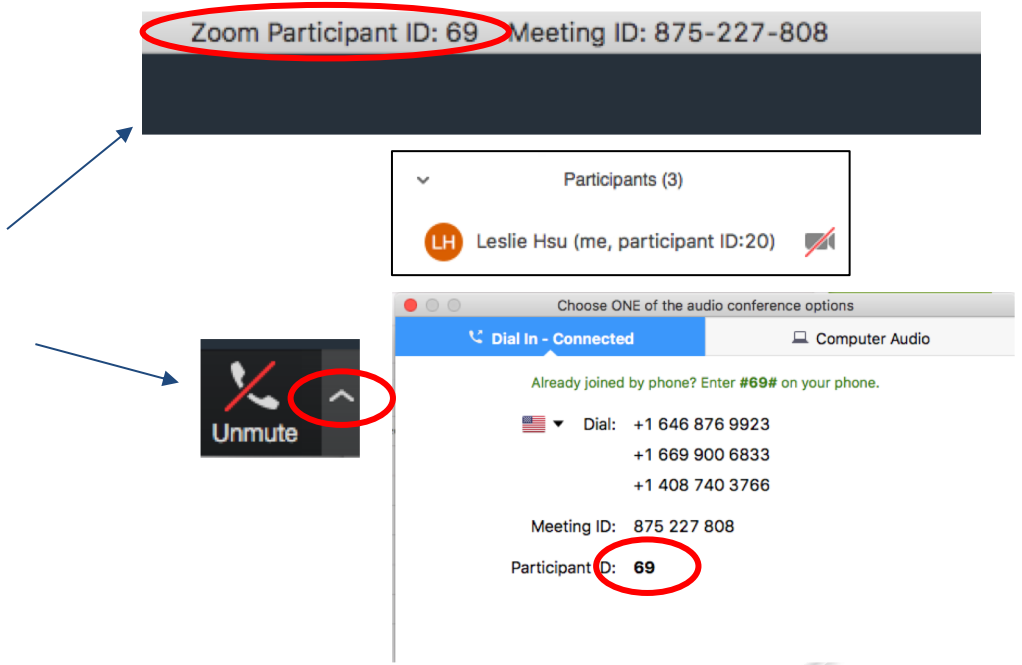
Community for Data Integration
FY19 Statement of Interest
Lightning Presentation Session

28 November 2018
Ask questions on slido.com, #8835

If you are using your phone for audio, please connect your name to your phone number.

To find your participant ID, look in the title bar of your zoom window,

or expand the menu by the phone icon in the lower left corner.



If already on phone, punch (**#, "your participant ID", #**) on the phone keypad

If you are on the web app but not yet on the phone, punch ("**participant ID", #)** when prompted during sign-in

CDI FY19 SOI Lightning Presentation Session

- Goal: Communicate and collaborate!
- Today's presentation process
- Q&A
- Examine and rank
- Voting: ballot will arrive Nov 30, voting open until Dec. 14.

The Community for Data Integration in one minute

Leslie Hsu

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Science Analytics and Synthesis

Open-source and open-workflow Climate Scenarios Toolbox for adaptation planning

Aparna Bamzai

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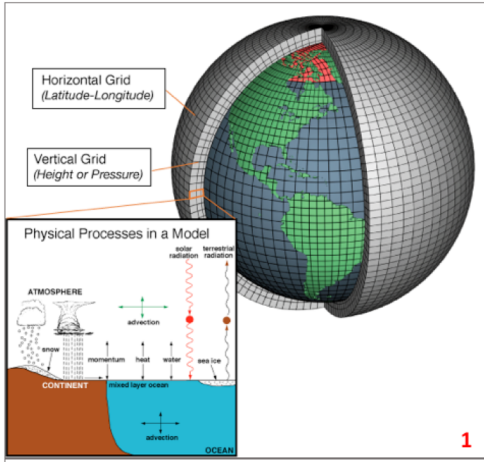

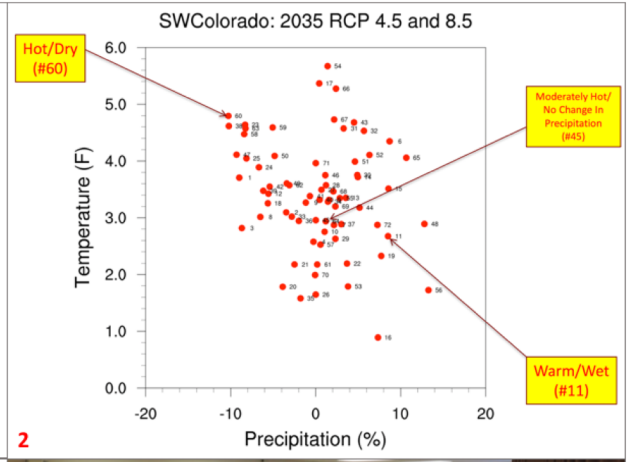

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Three Climate Scenarios for the Gunnison Basin Region by 2035

The following summary was compiled from three climate scenarios and a review of literature. The **Hot and Dry** scenario is from hadgem2-es.1.rcp85; the **Warm and Wet** is from ccsm-cm5.1.rcp45 and **Moderate Hot and No Change in Precipitation** is from ccsm1-bgc.1.rcp85

Scenarios	Hot/Dry	Warm/Wet	Moderately Hot/No Change in Precipitation/High Amplitude Variability
Temperature	Annual temperature increases by 5F; At lower elevations: summer days with temperature above 77F (25C) increases by 1 month, and nights with temperature above 68F = 10	Annual temperature increases by 2F; At lower elevations: summer days with temperature above 77F (25C) increases by 1 week	Annual temperature increases by 3F; At lower elevations: summer days with temperature above 77F (25C) increases by 2 weeks, and nights with temperature above 68F = 20
Precipitation	Annual precipitation decreases by 10%; less frequent and more intense individual rain events; summer monsoon rains decrease by 20%	Annual precipitation increases by 10%; more intense individual rain events; summer monsoon rains increase by 10%	Annual precipitation does not change but much greater fluctuations year to year (leading to more frequent feast or famine conditions); El Nino of 1982/83 strength occurs every 7 years
Runoff	Runoff decreases by 20% and peak runoff occurs 3 weeks earlier	Runoff volume does not change but peak runoff earlier by 1 week	Runoff decreases by 10% and peak runoff occurs 2 weeks earlier
Heat Wave	Severe and long lasting; every summer is warmer compared to 2002 or 2012 (5F above normal)	Hot summers like 2002 and 2012 occur once every decade	Hot summers like 2002 and 2012 occur once every 3 years
Drought	More frequent drought years like 2002/2012 - every 5 years	No change in frequency but moderate increases in intensity; fewer cases of multi-year drought	Drought years like 2002/2012 occur once every decade
Snowline or Freezing Level	Snowline moves up by 1200ft	Snowline moves up by 600ft	Snowline moves up by 900ft
Wildfire	Fire season widens by 1 month; greater fire frequency (12x) and extent (16x) in high elevation forest	Increases in fire frequency (4x) and extent (6x)	Fire risk during dry years is very high at all elevations b/c of large fuel build up from wet years; on average fire frequency increases 8x, and area burnt increases 11x
Dust Storms	Extreme spring dust events like 2009 every other year; causing snowmelt and peak runoff to be six weeks earlier	Same as current	Frequency of extreme dust events increases from current but tied to extreme dry years
Growing Season	Increases by 3 weeks	Increases by 1 week	Increases by 2 weeks

Source: Imtiaz Rangwala (Western Water Assessment & NOAA ESRL, Boulder)
Renee Rondeau (Colorado Natural Heritage Program)

Extending ScienceBase for Disaster Risk Reduction

Joe Bard

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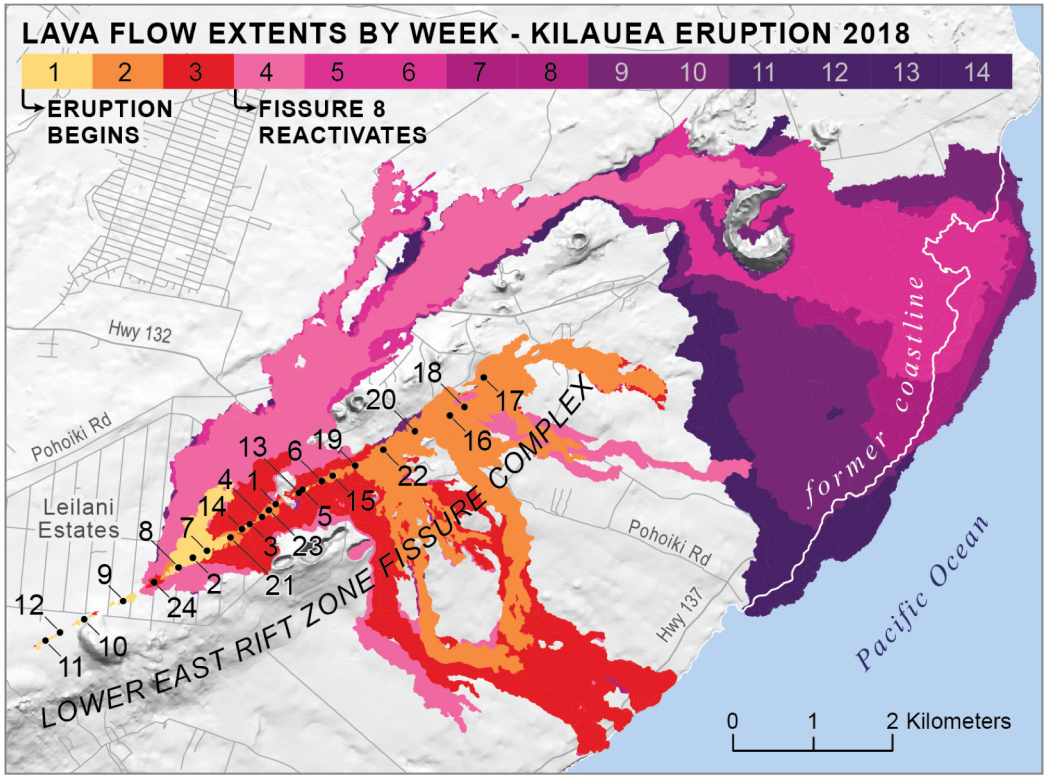
USGS Cascades Volcano Observatory



Transforming Biosurveillance by Standardizing and Serving 40 Years of Wildlife Disease Data

David Blehert

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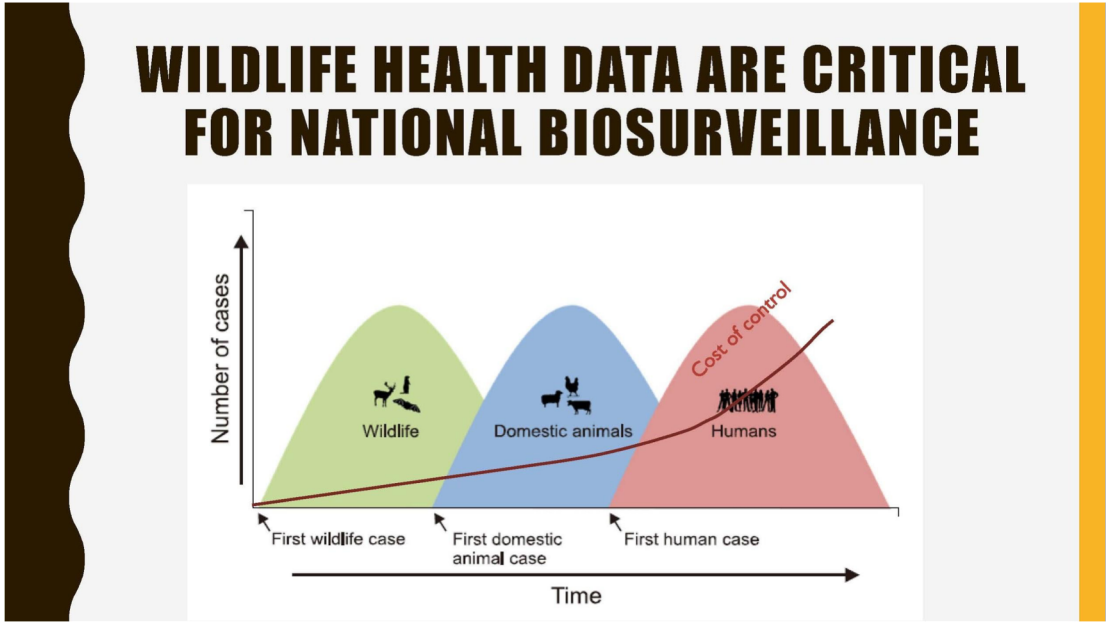
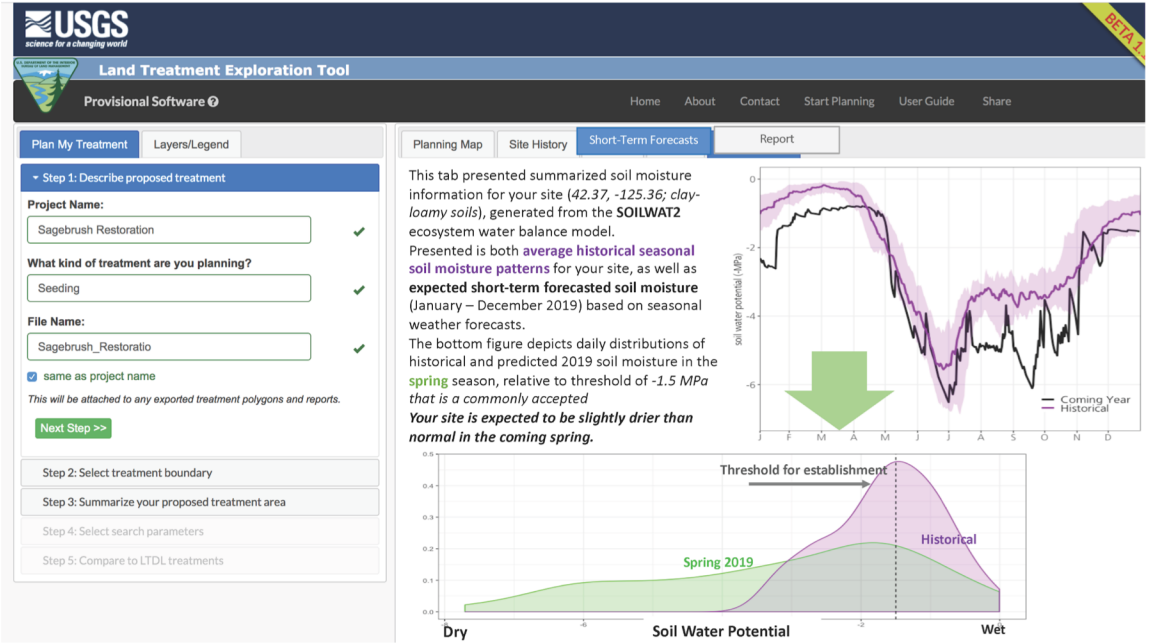
National Wildlife Health Center



Integrating short-term climate forecasts into a restoration management support tool



John Bradford

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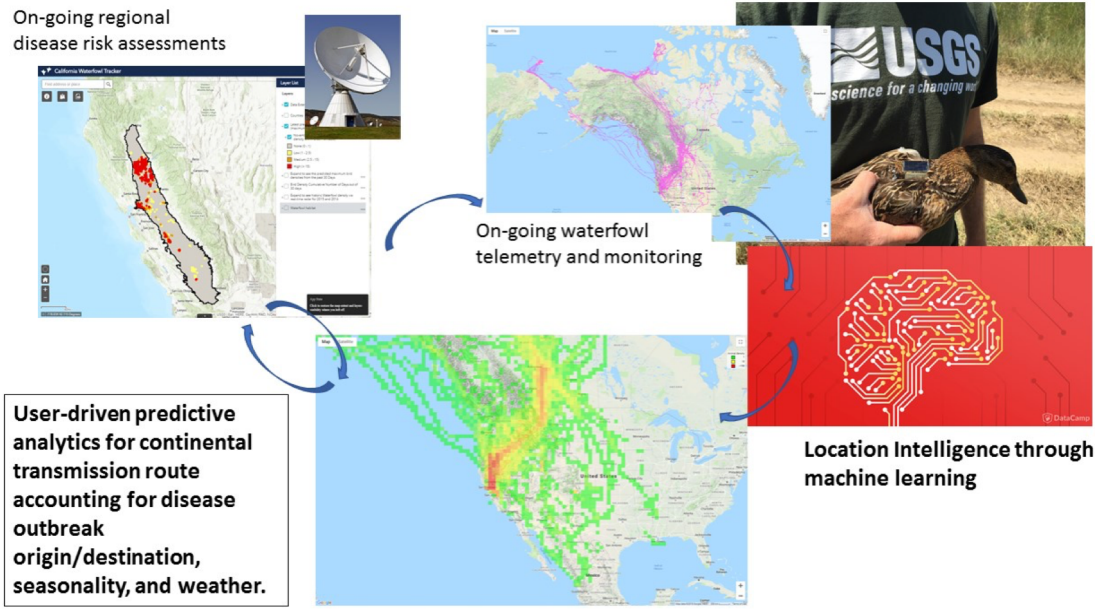
An interactive webtool for disease transmission risk assessment by waterfowl in western North America



Michael Casazza

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Developing a synthetic environmental DNA (eDNA) spike for use in natural environments

Robert Scott Cornman

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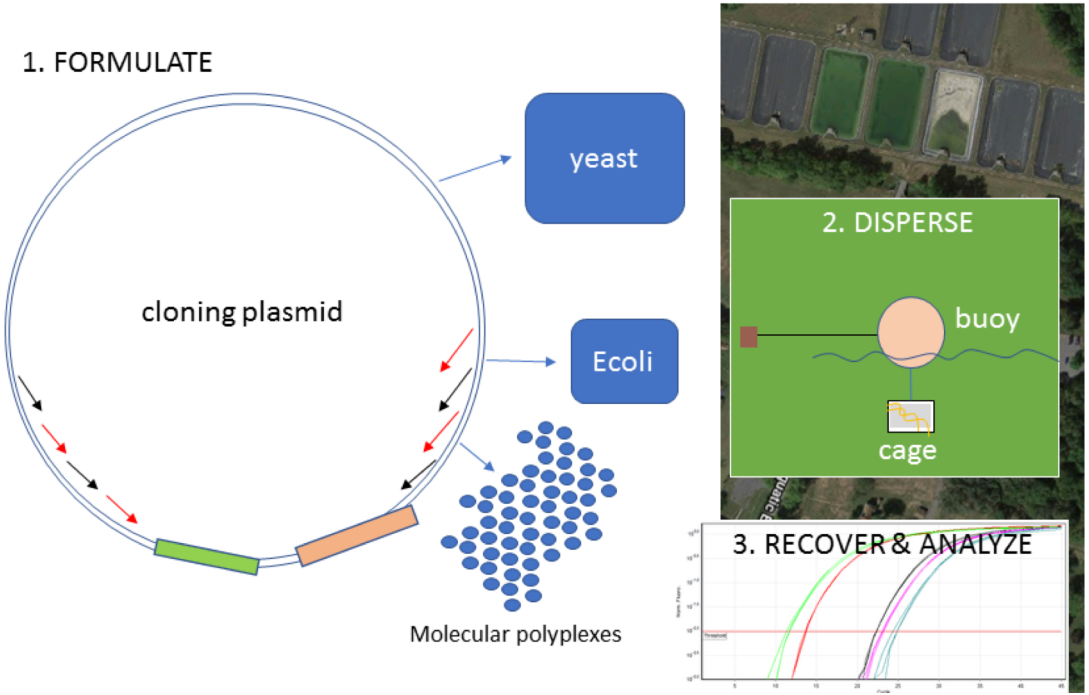
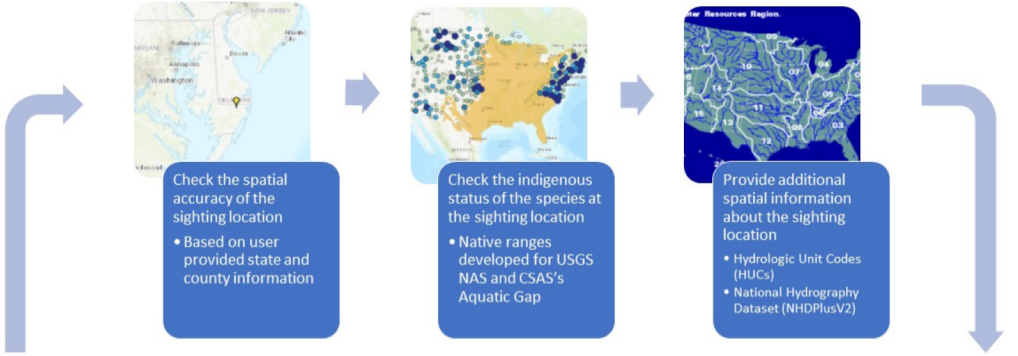


National Public Screening Tool for Invasive and Non-native Aquatic Species Data



Species	Latitude	Longitude	State	County
Noturus insignis	39.59	-77.82	MD	Washington
Noturus insignis	39.15	-77.52	MD	Montgomery
Micropterus salmoides	39.59	-77.82	MD	Montgomery
Micropterus salmoides	39.59	-77.82	MD	Washington
Pylodictis olivaris	39.15	-77.52	MD	Montgomery
Carp	39.15	-77.52	MD	Montgomery

Species	Latitude	Longitude	State	County	Taxa error	Spatial error	Non-native	HUC 8 (Number)	HUC 8 (Name)
Noturus insignis	39.59	-77.82	MD	Washington				2070008	Middle Potomac-Catoctin
Noturus insignis	39.15	-77.52	MD	Montgomery				2070008	Middle Potomac-Catoctin
Micropterus salmoides	39.59	-77.82	MD	Montgomery		X			
Micropterus salmoides	39.59	-77.82	MD	Washington			X	2070008	Middle Potomac-Catoctin
Pylodictis olivaris	39.15	-77.52	MD	Montgomery			X	2070008	Middle Potomac-Catoctin
Carp	39.15	-77.52	MD	Montgomery	X				

Wesley M. Daniel

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Enhancing cell phone monitoring with the R package AMMonitor with R Shiny and Android Applications

Therese Donovan

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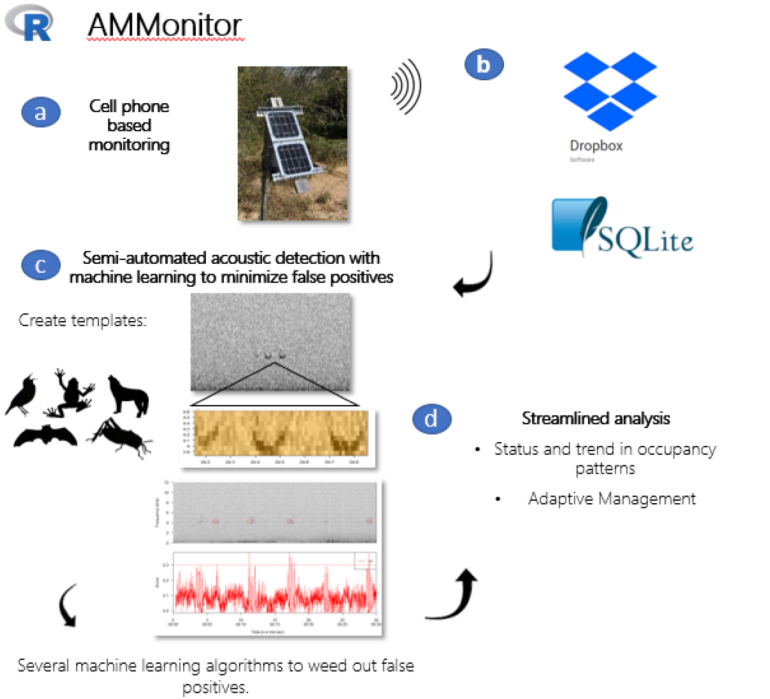

HELP!!!!

- ✓ **Cell phones run on Marshmallow 6.0 and uses Tasker to control other apps. SOLUTION: Create a dedicated AMMonitor app.**
- ✓ **The machine learning algorithms require that a subset of data are "labeled" by humans, a great opportunity for citizen science. SOLUTION: Rshiny app for labeling.**

High-Resolution, Interagency Biosurveillance of Threatened Surface Waters in the United States

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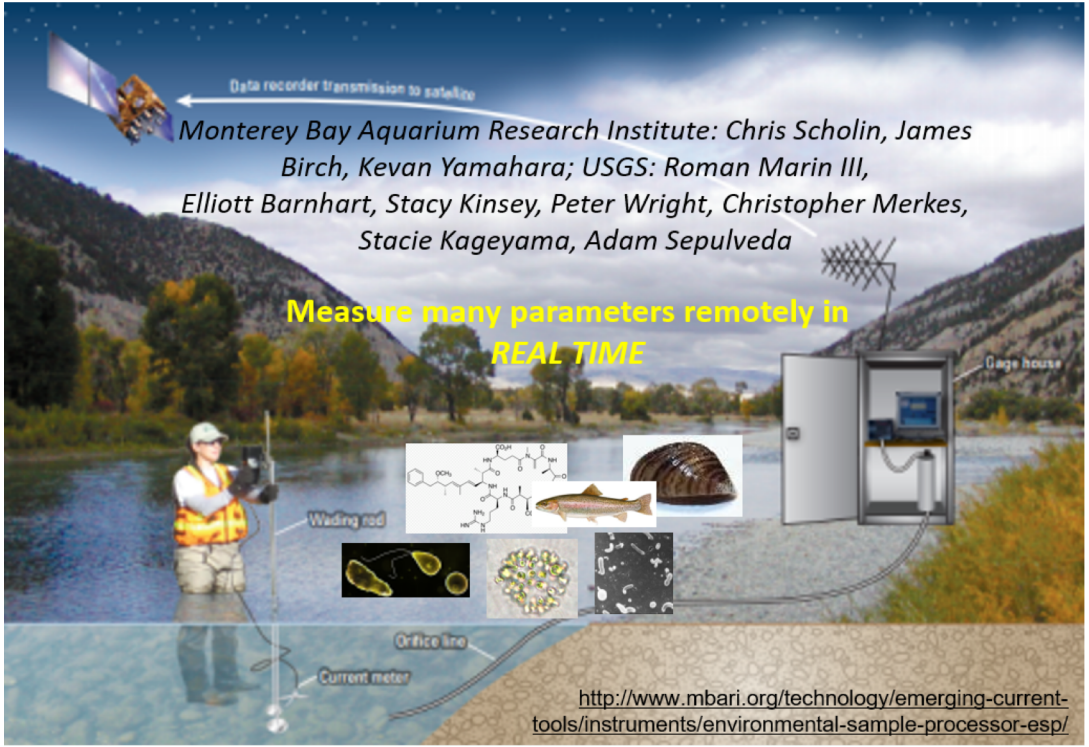
USGS Wyoming-Montana Water Science Center



Develop Cloud Computing Capability at Streamgages using Amazon Web Services GreenGrass IoT Framework for Camera Image Velocity Gaging

Frank L. Engel

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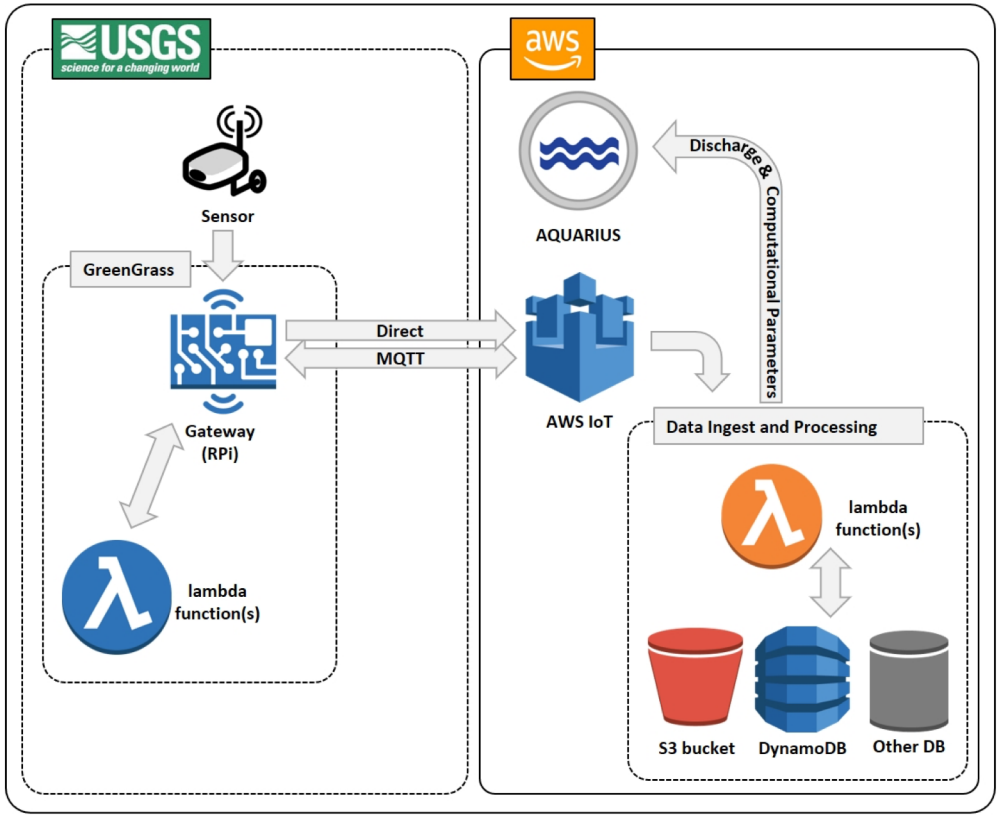

Serving the U.S. Geological Survey's geochronological data

Amy Gilmer

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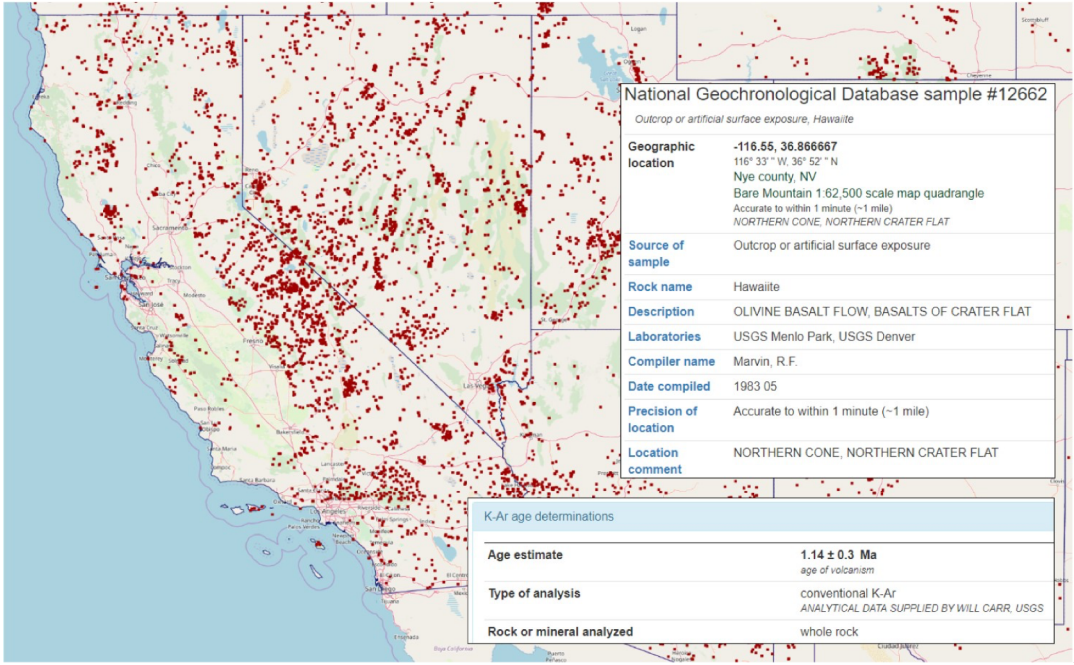
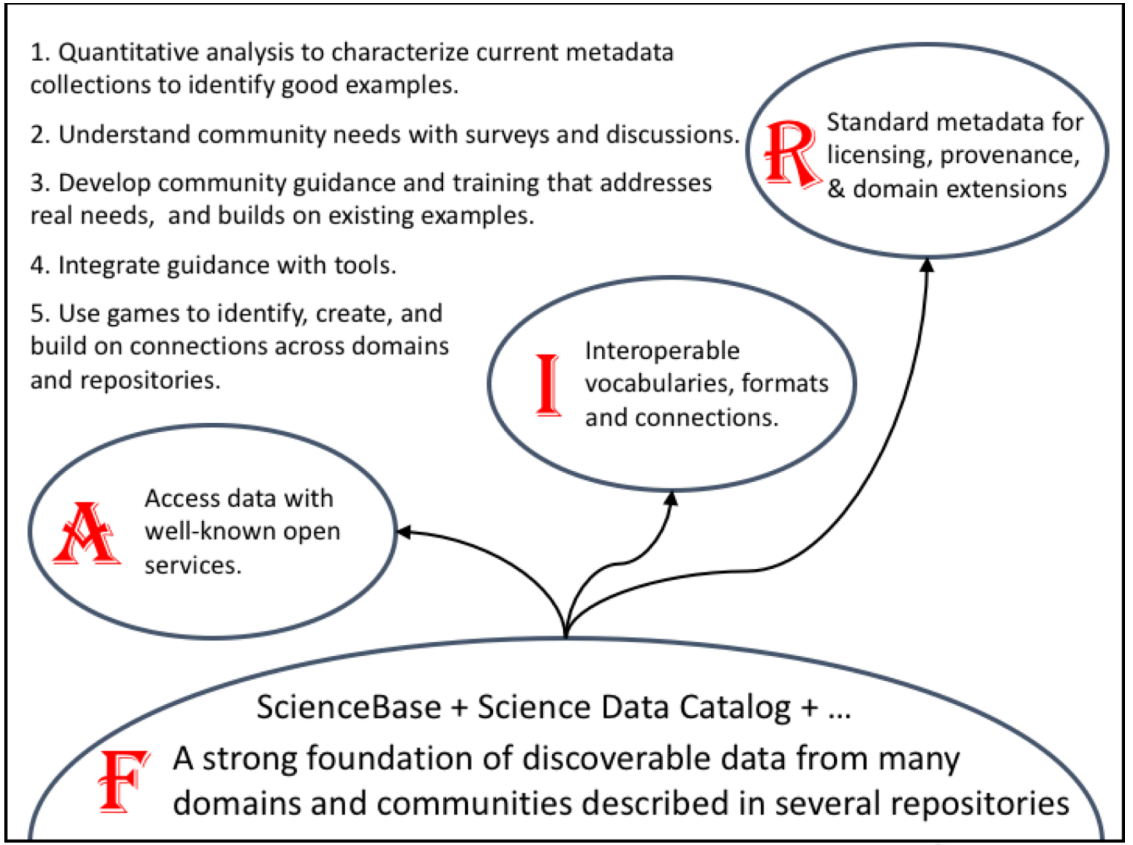
USGS Geology and Environmental Change Science Center



Putting the AIR in FAIR



Glenn Guempel

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Establishing standards and integrating environmental DNA (eDNA) data into the USGS Nonindigenous Aquatic Species database

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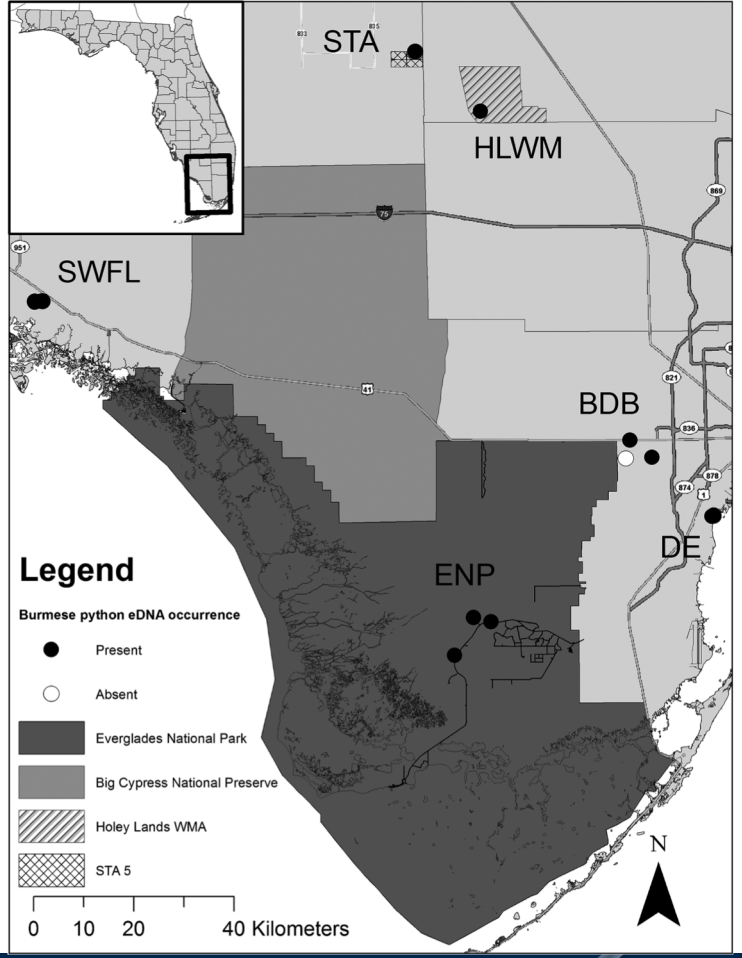

Synthesizing data provenance tactics and tools across earth science community platforms

Kristin Jaeger

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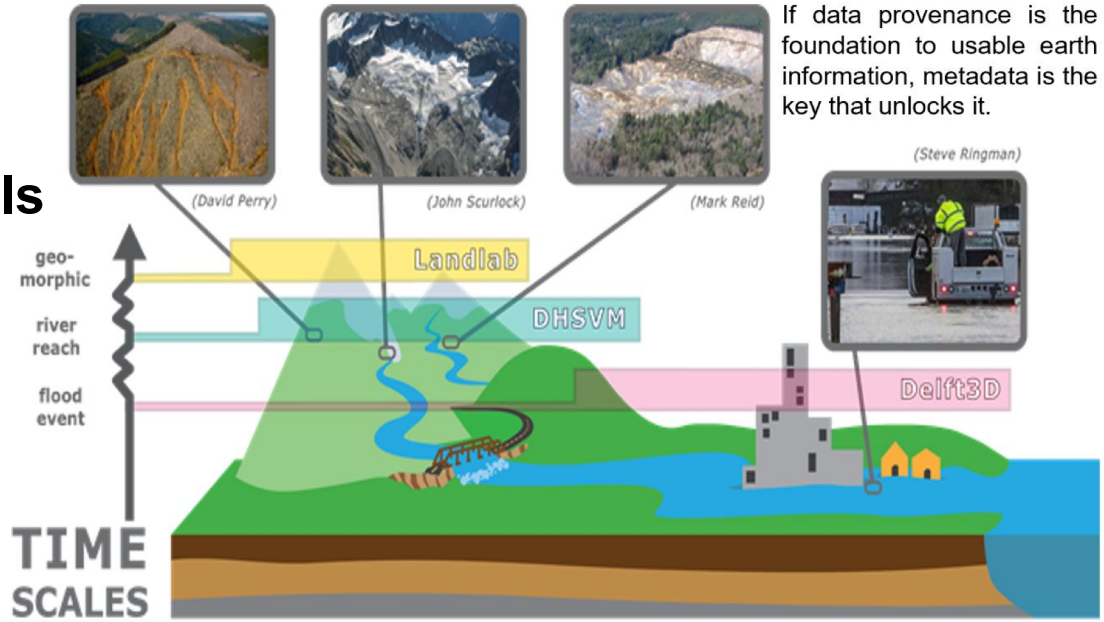

If data provenance is the foundation to usable earth information, metadata is the key that unlocks it.

Case Study Project: 3 models + 30 researchers
~5 stakeholder groups with data sharing agreements +
~20 input datasets with metadata standards +
~50 model derived output datasets with NO metadata standards.

Subsidence Susceptibility Map for the Conterminous U.S.

Jeanne Jones

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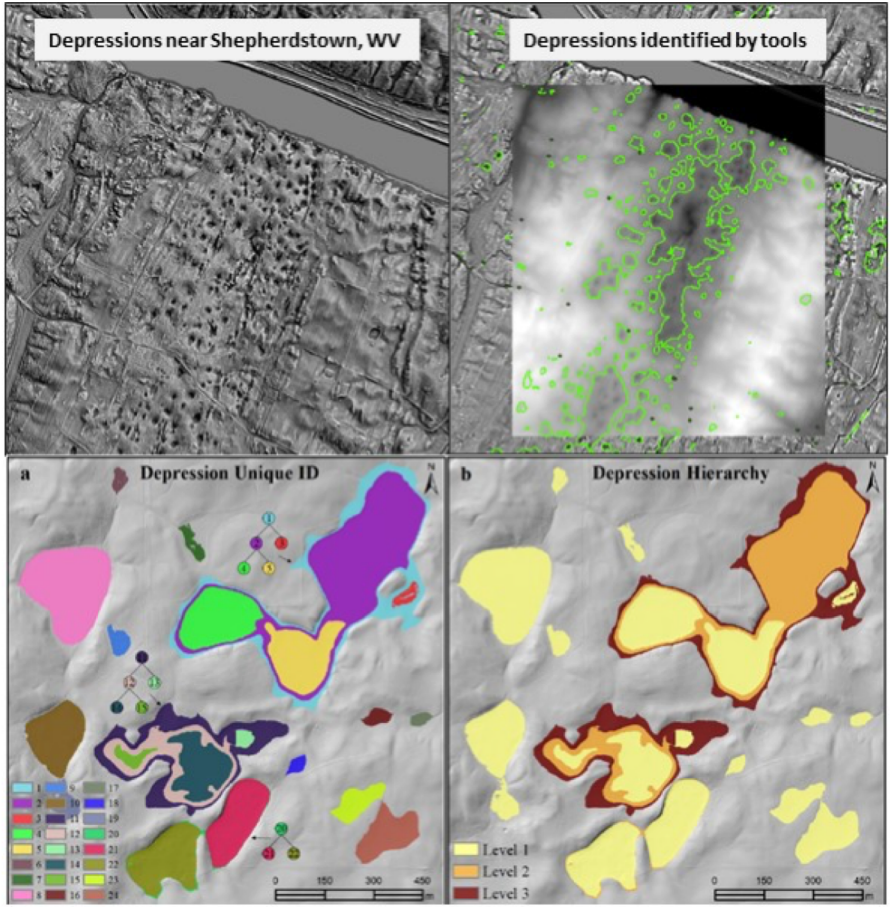

Government and community magnetotelluric data: playing FAIR

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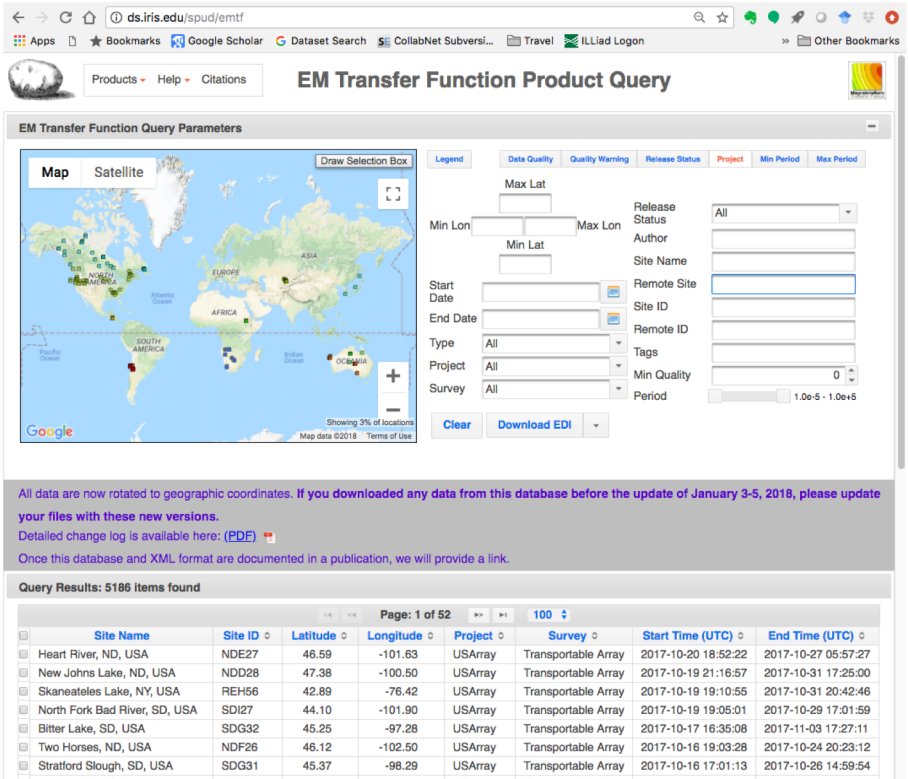

Interactive Web-based Decision Support Tool Advancing Accessibility of Aquatic Pathogen Surveillance and Genotyping Data for Risk Management

Gael Kurath

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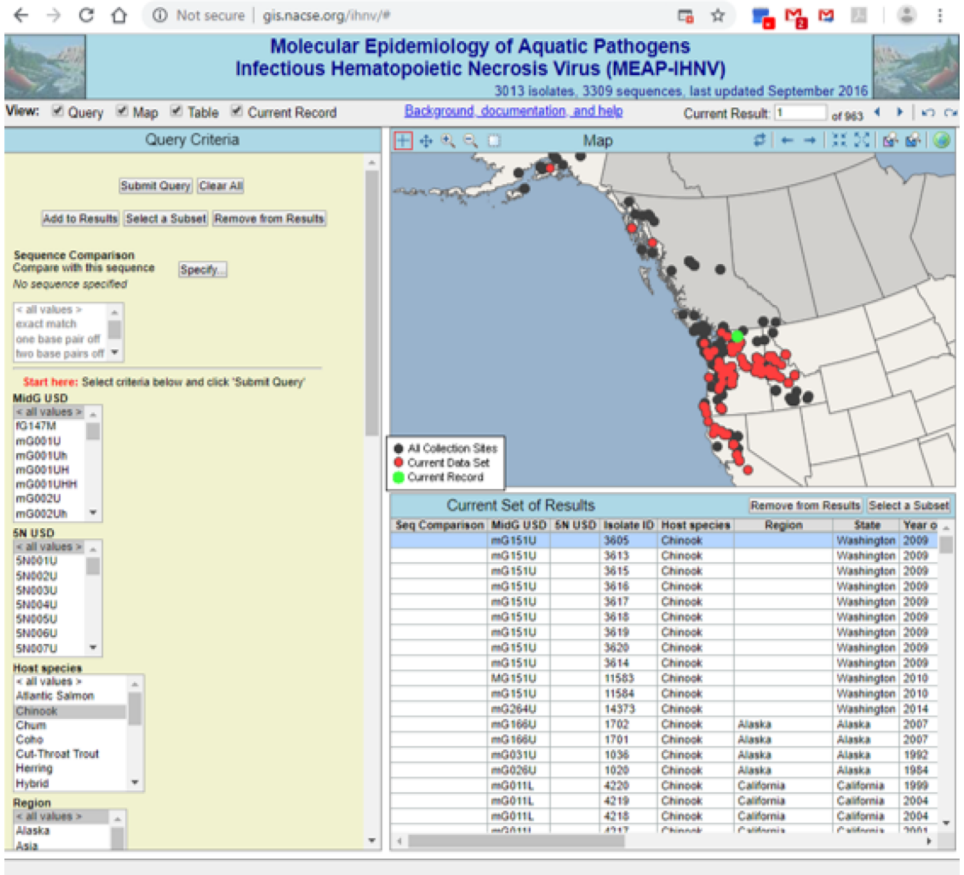

A generic web application to visualize and understand movements of tagged animals

Ben Letcher

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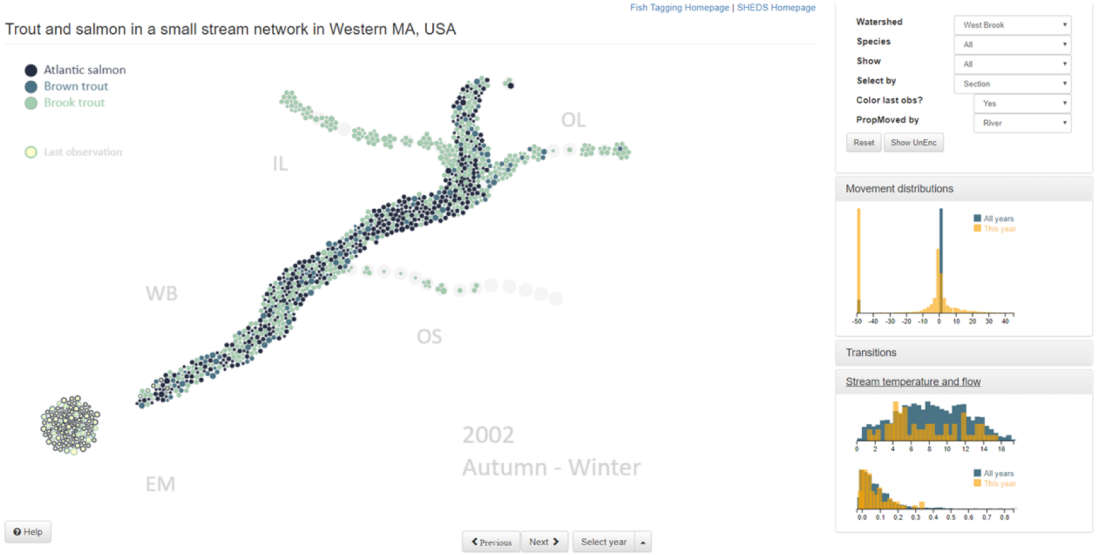

http://pitdata.ecosheds.org/fish-movements/

Building a Roadmap for Making Data FAIR in USGS

Fran Lightsom

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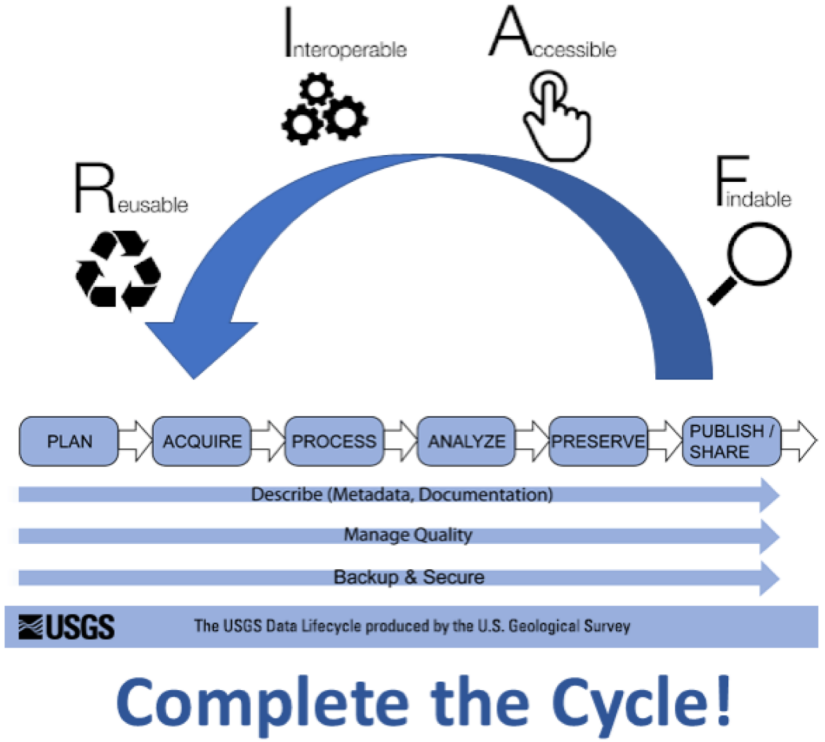

Developing an Analytical Tool to Compare Hazard-related Crowdsourced and Citizen Science Data to Official Sources

Sophia B Liu

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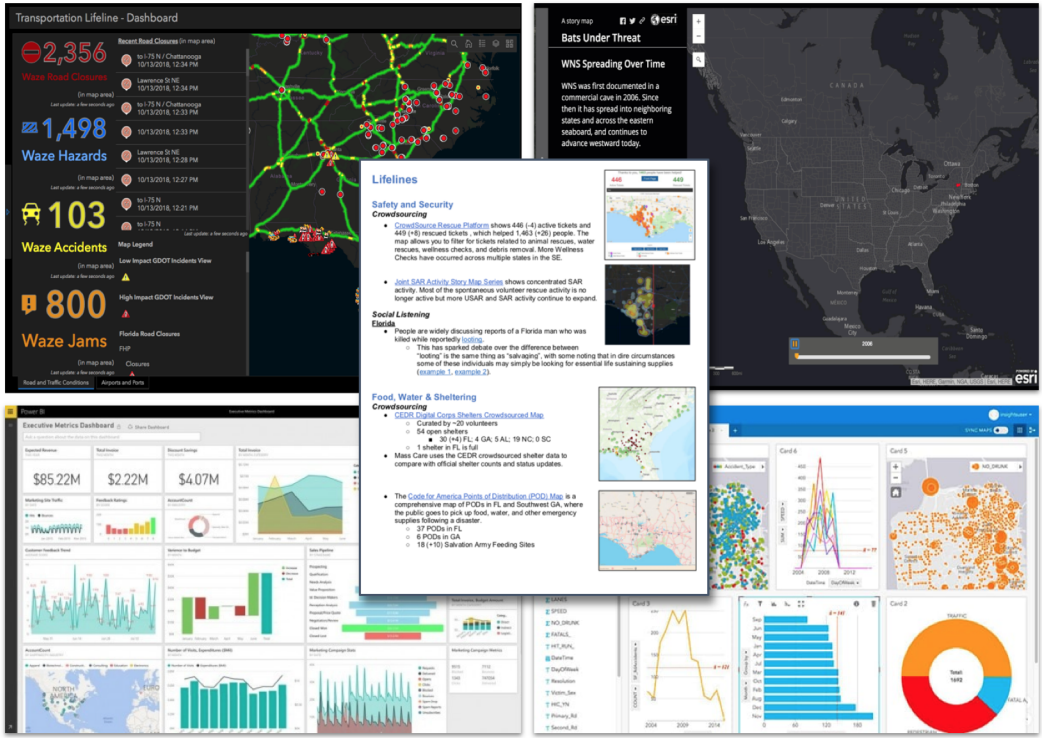

USGS Safety Program Risk Mapper

Scott Lowe

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USGS Midwest Region Office

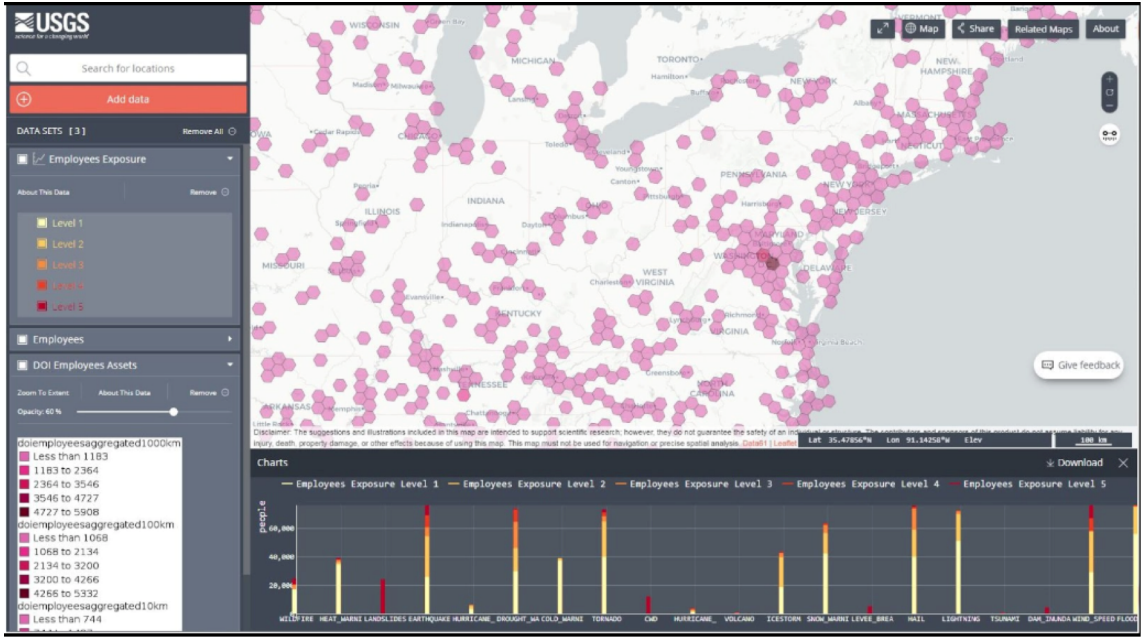

Image: Source CDI Risk Mapper Project (Example)

FishACT: Interactive Database on Fish Management Actions to Climate Impacts

Abigail Lynch

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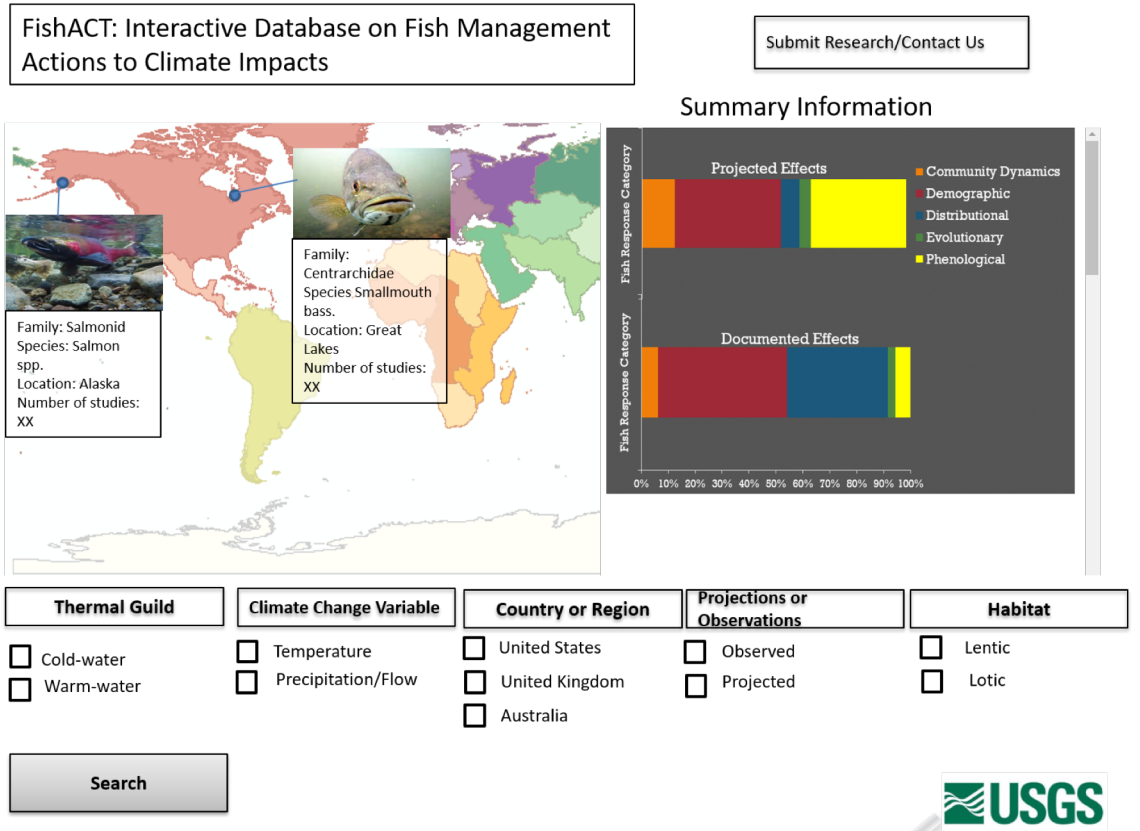

Coupling Hydrologic Models with Data Services in an Interoperable Modeling Framework

Richard McDonald

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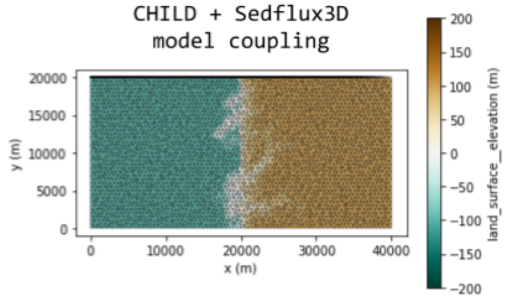
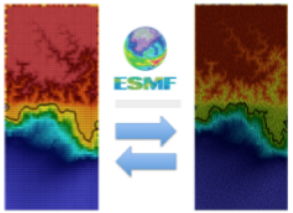
USGS Water Mission Area - Model Support and Coordination Branch


```python
import pymt

child = pymt.plugins.Child()
sedflux = pymt.plugins.Sedflux3D()

for model in (child, sedflux):
    model.initialize()

sedflux.set_value(
    "bedrock_surface__elevation",
    mapfrom=("land_surface__elevation", child)
)
sedflux.update()

child.set_value(
    "land_surface__elevation",
    mapfrom=("seabed_sediment_surface__elevation", sedflux),
    nomap=np.where(z > 0.0),
)
child.update()
```



CSDMS

PyMT



Seasonal ecological flow models for Rainbow Trout and flow sensitivity distribution maps

James McKenna

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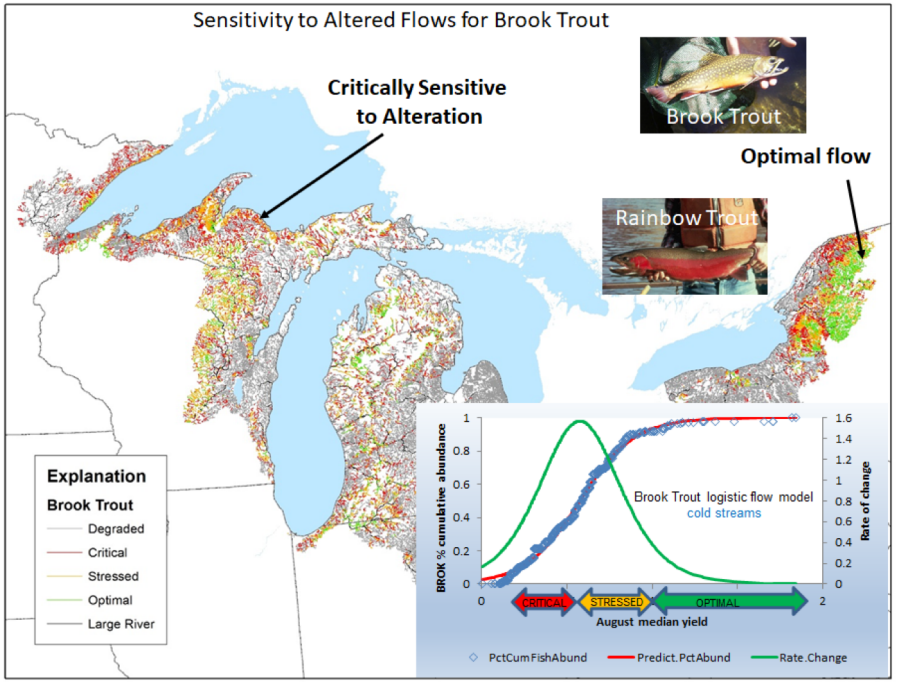
USGS Great Lakes Science Center Tunison Laboratory of Aquatic Science



Leveraging deep learning through use of the dl_tools software package to enhance wetland mapping capabilities of the NWI

David Millar

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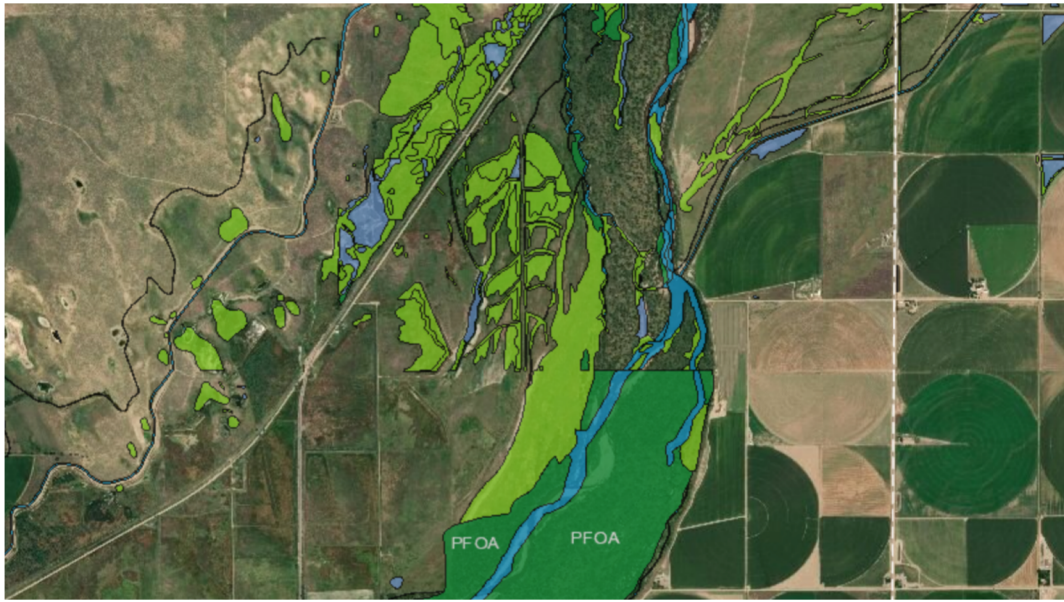

Development of Wind & Wildlife Data Information System and User Portal

Tamatha A. Patterson

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USGS Great Lakes Science Center--

Lake Michigan Ecological Research Station

Automated tool for host test lists for biocontrol agents used for the control of invasive weeds.

Ian Pearse

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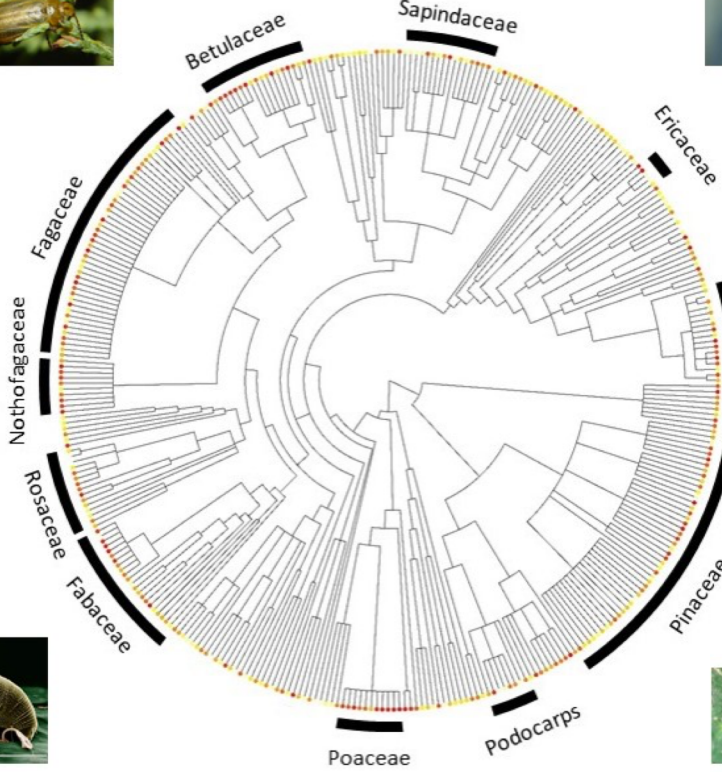
USGS - Fort Collins Science Center



Building a New On-line Data Store for the SageSTEP Project

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Implementing a Grassland Productivity Forecast for the U.S. Southwest

Sasha Reed

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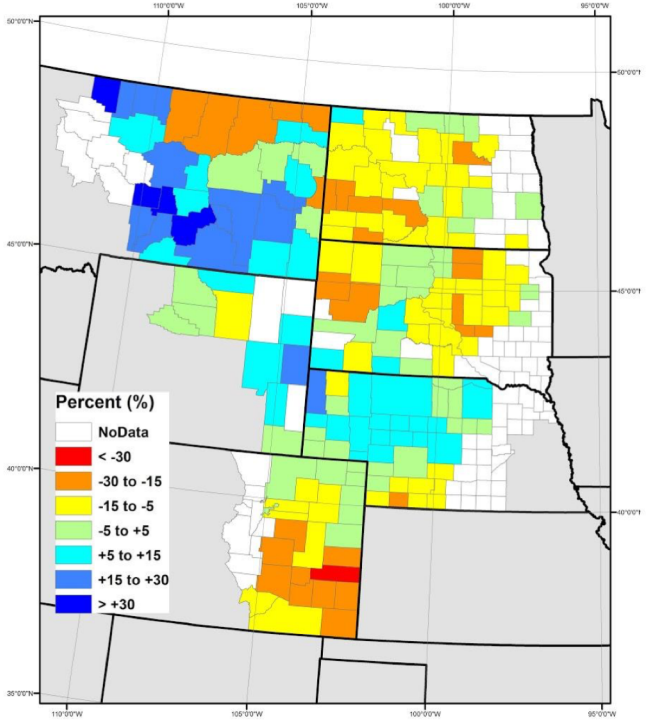
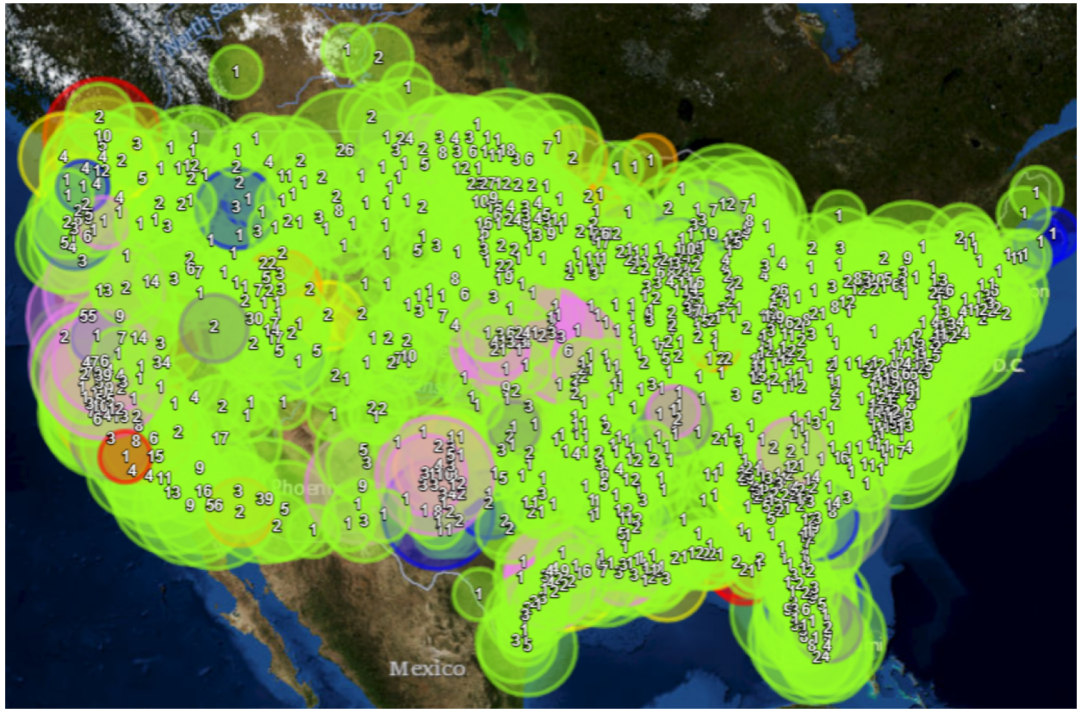
USGS Southwest Biological Science Center

Biweekly forecasts of grassland production relative to 35 year average



How much forage/soil stability/NPP will you have this year?

Building web-service based forecasting tools for wildlife disease managers



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Water Security in U.S. Megacities: Building Decision Frameworks Beyond Water Management

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ExDetect: a cloud-based remote sensing and GIS tool to detect and monitor the spread of exotic annuals around energy development sites

Miguel Villarreal

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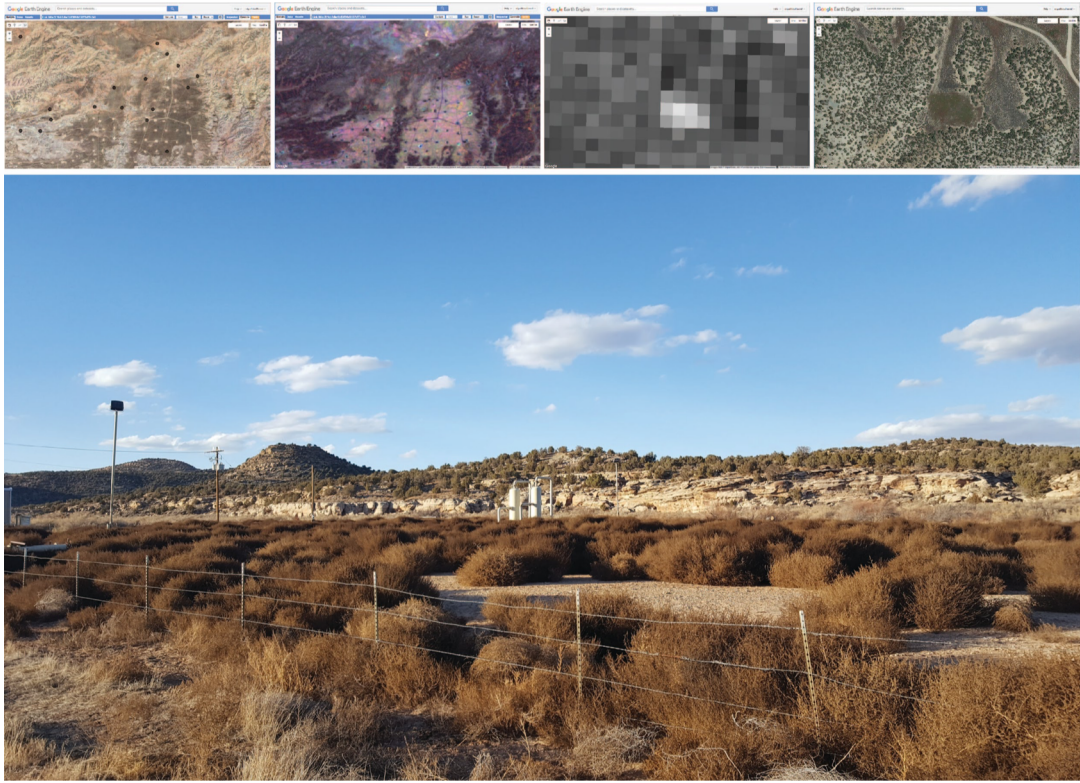

Image Analysis with Machine Learning: tile-drain detection and delineation in agricultural landscapes

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